

PLANETARY DEFENSE
INTERAGENCY
TABLETOP EXERCISE 4



FEMA



JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

Module 4

Immediate Response and Transition to Recovery

Facilitated by Ruth Vogel (APL) and Doug Logan (OTP)



Asteroid 2022 TTX Impacts Earth

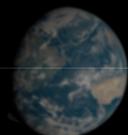




Module 4 Overview

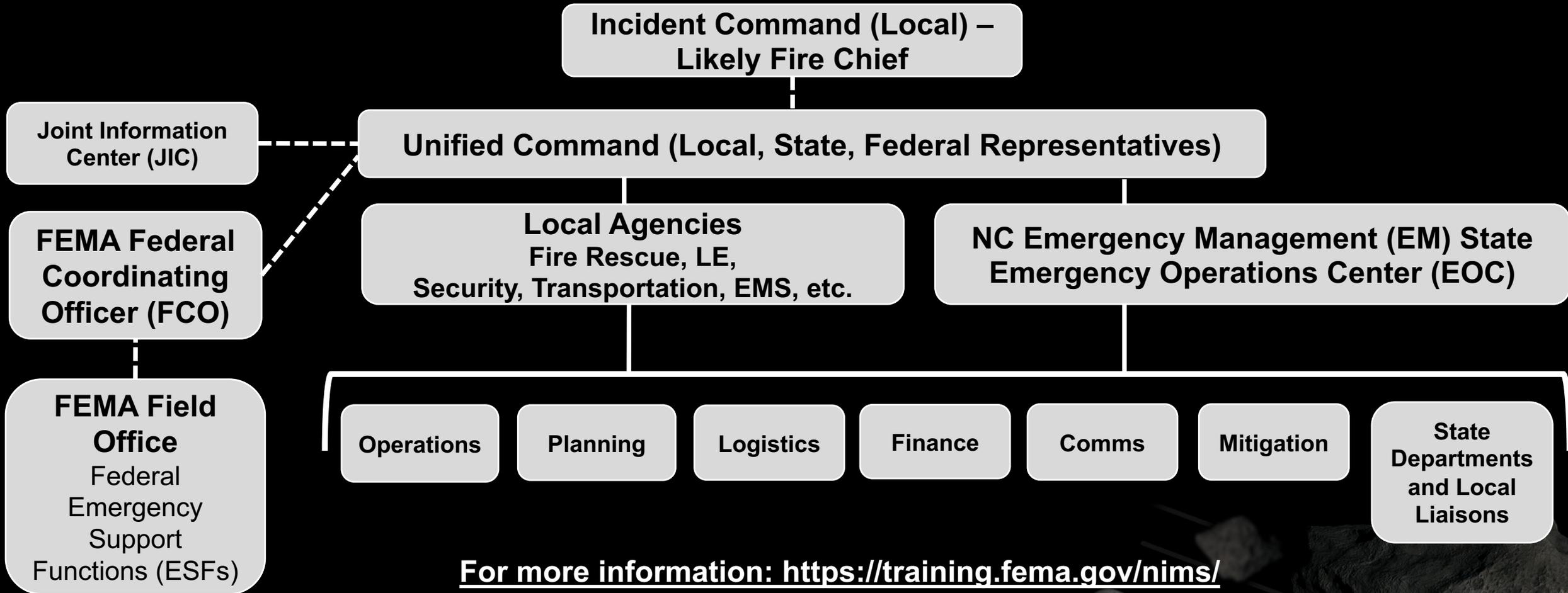
Immediate hours post impact, so our discussions will focus on:

- Acquiring situational awareness for informed decision-making
- Understanding risks and hazards
- Ensuring accurate public messaging
- Coordinating safety and security

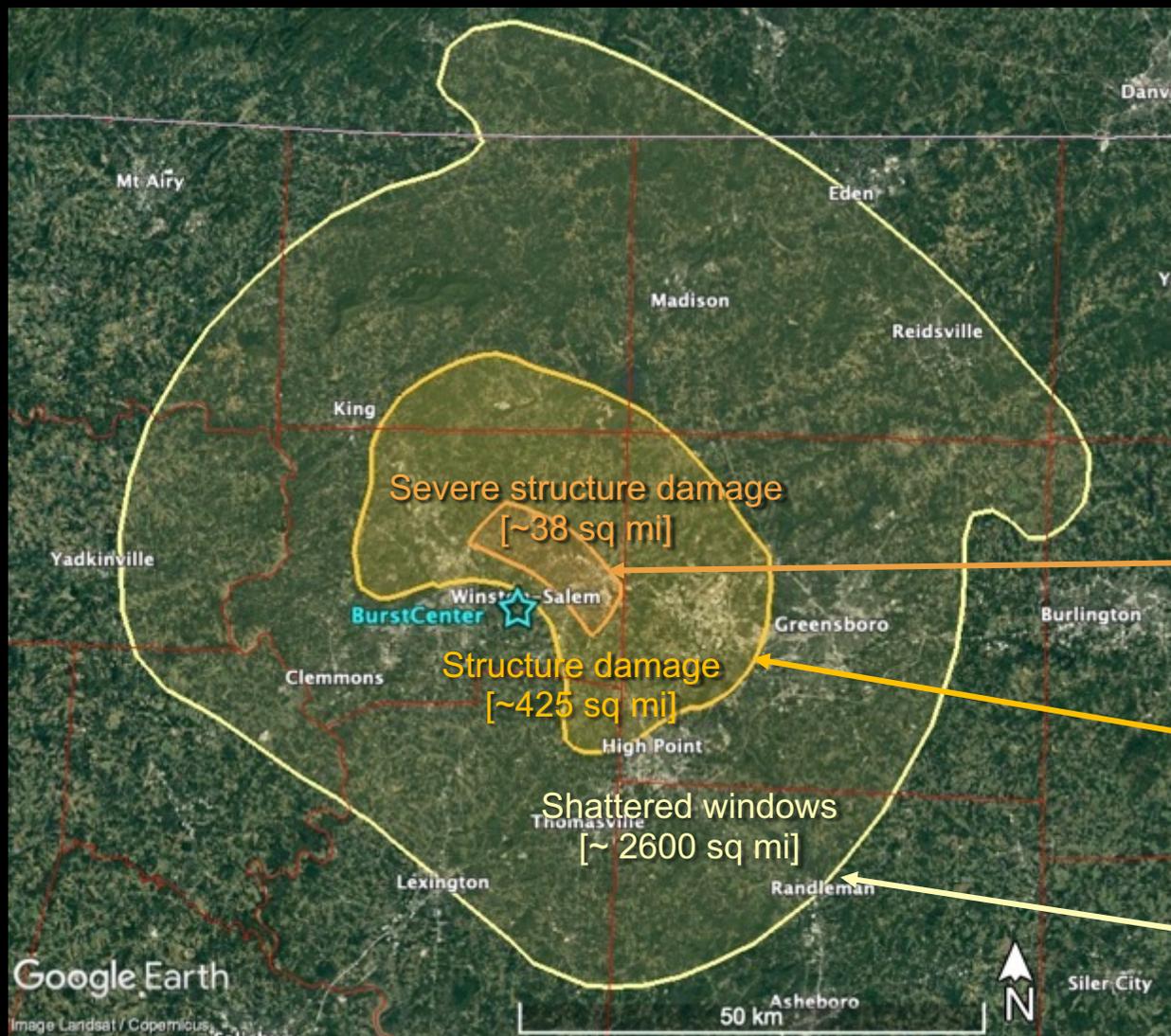




Incident Command System (ICS)



INJECT 4.1: Understanding the Damage



- Asteroid Airburst
 - Estimated at ~8 mi altitude,
 - ~10 megaton energy
 - Max peak overpressure ~3.5 psi
 - Max ground wind speed ~66 mph
- Severe structure damage and some structure collapse, risk of secondary fires
- Widespread structural damage, windows and doors blown out, risk of secondary fires
- Window breakage and some minor structure damage

10 Megatons of Energy



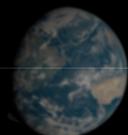
1950s Nuclear Test

Doom Towns in Nevada constructed to understand nuclear blast-related damage



FootageArchive - Videos From The Past
137K subscribers

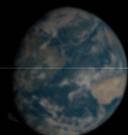
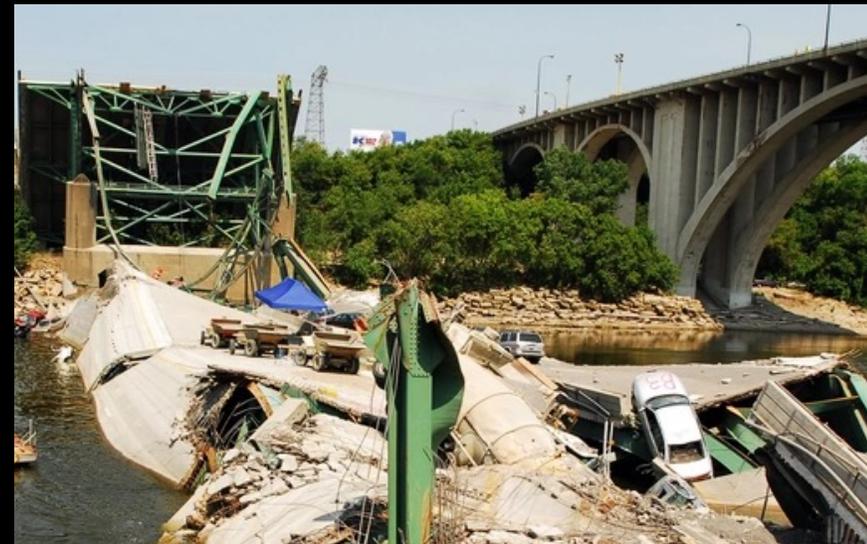
From: Nuclear Bomb Dropped on Village - 1950s Test
<https://www.youtube.com/watch?v=vMopb1eN2t4>



Drone Images



Drones are capturing images of shattered windows, collapsed buildings and bridges, and secondary fires, and people are trapped and waving for help.



Reporting from the Public

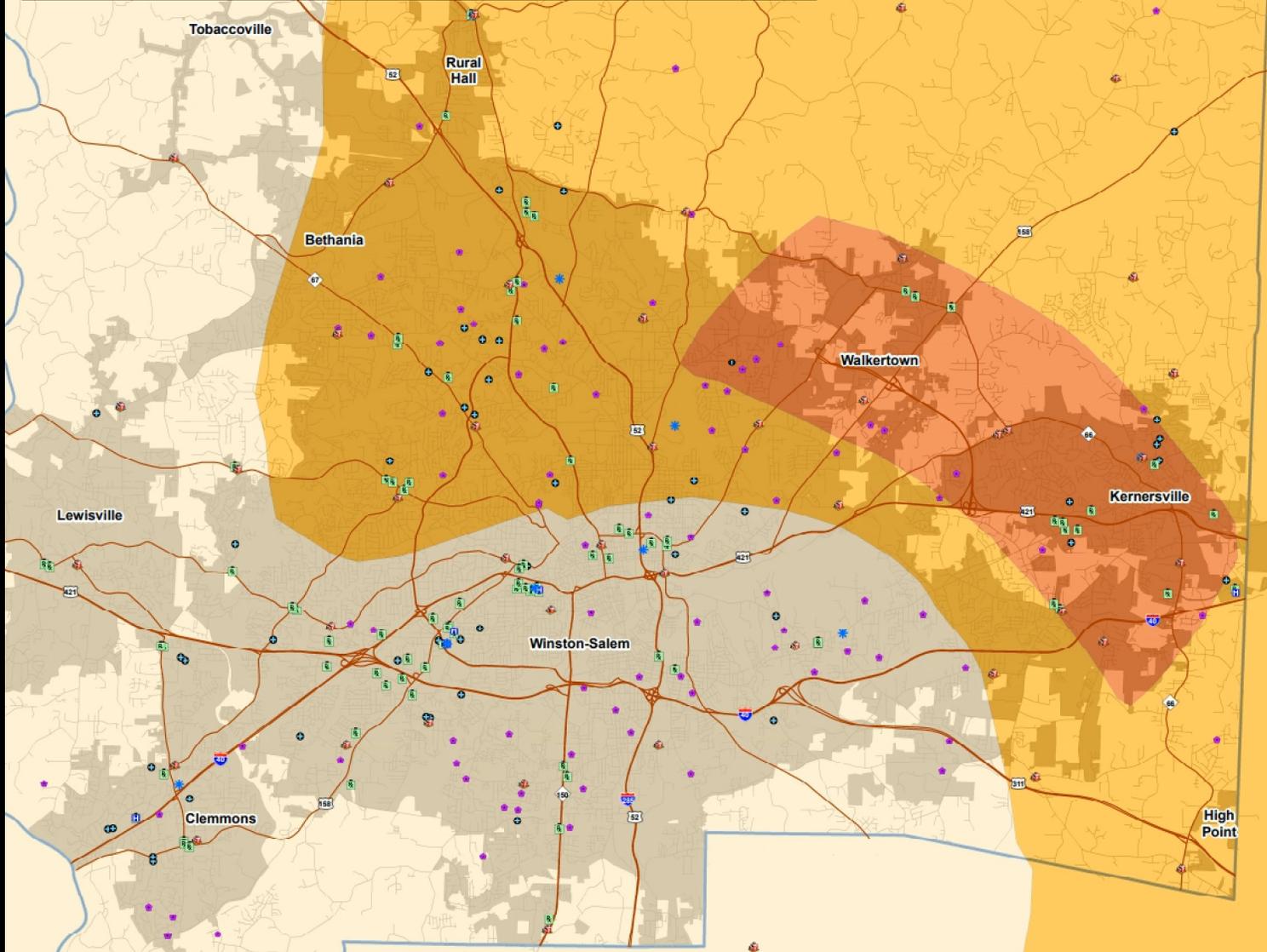


The Emergency Communications Centers (ECCs) are overwhelmed with calls from people reporting collapsed buildings and bridges, windows shattered, small fires, and people trapped under rubble.





Health and Safety Infrastructure



- Fire Station
- EMS Base
- Pharmacies
- Hospitals
- Longterm Care Facility
- Mental Health Facility
- Interstate / Highway
- Streets

Damage Level

- 1 psi
- 2 psi
- 3 psi
- Municipalities
- County Boundary

INCIDENT
MANAGEMENT
TEAM
ALL HAZARDOUS UNIT

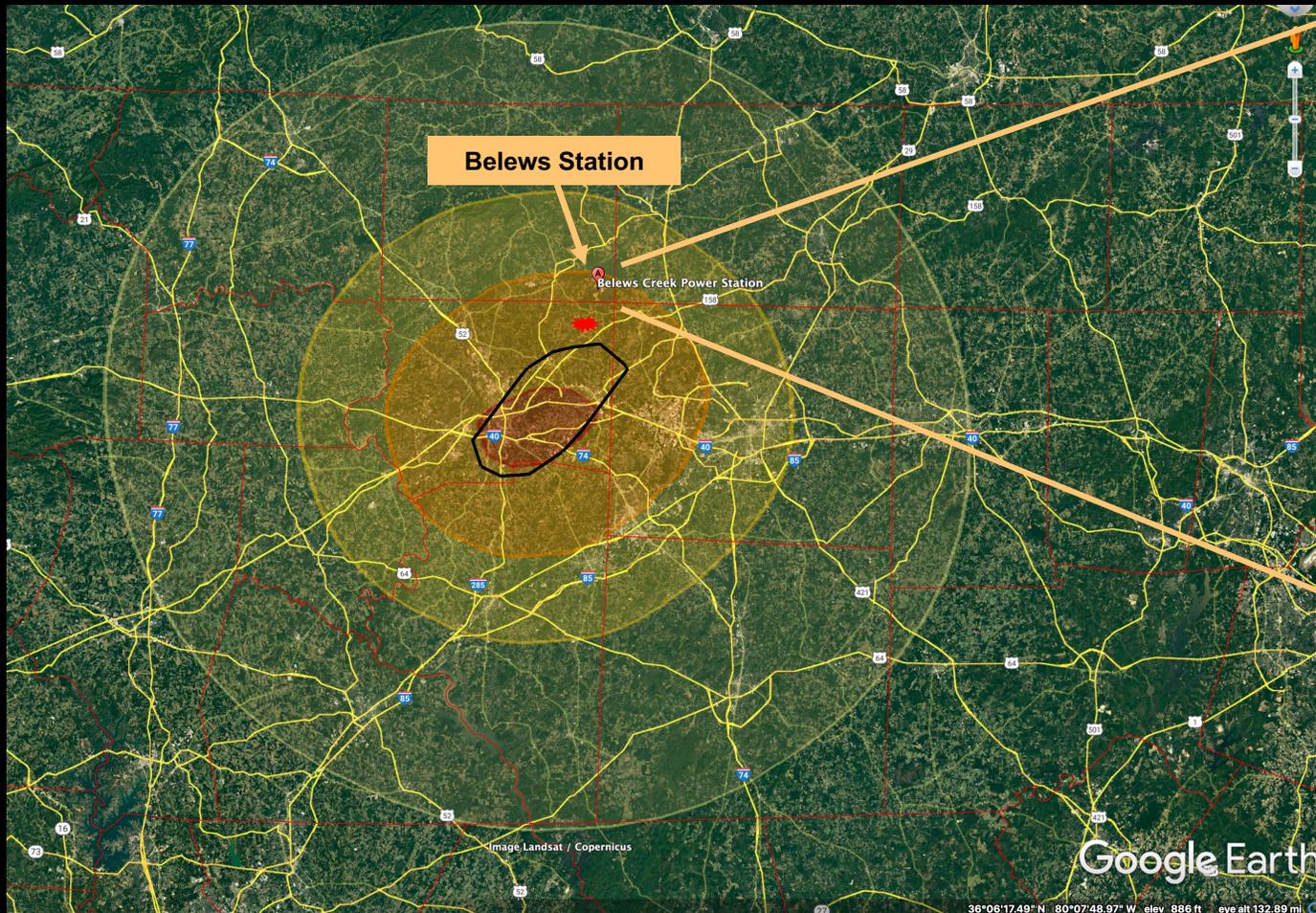
WINSTON SALEM
EMERGENCY
MANAGEMENT
FORSYTH COUNTY, NC
1957

MapForsyth
City-County Geographic Information Office

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The Belews Power plant, which is ~15 miles NE of Winston-Salem, has been affected by the airburst and has been shut down. This has caused a power outage to the Piedmont Triad, which includes the cities of Greensboro, Winston-Salem, and High Point.

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This area, with a normal estimated population of ~1.6M, is without power.

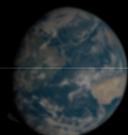


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Inject 4.1 Questions

- What additional information is needed to help understand immediate needs in the first 24 hours after an event like this?
- Given this is an event type that the public safety community has never dealt with before, do you expect a different level of response and support to be available for immediate assistance?
 - *Would there be a fear of unknown risks, hazards, something from outer space has hit this earth . . . what does it contain?)*
- What are your security-related concerns at this time?



Inject 4.2 – Misinformation



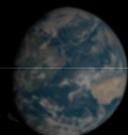
Experts are being interviewed by the media from around the world.

There is one local person, who is referring to himself as a “National Expert T.X. Asteroid,” who is posting misinformation on social media and being interviewed by national news organizations. T.X. Asteroid is warning people that **“the material from the asteroid contained toxic materials from outer space and that those materials were spread throughout the region by the air blast, and people should expect to experience radiation exposure-like symptoms.”**

Inject 4.2: Questions



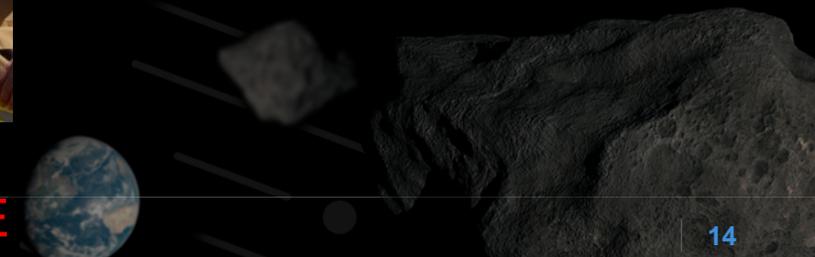
- How could we get ahead of this type of false reporting?
- Who is best voice of trust at this time?



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Ongoing Local Response Discussions

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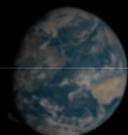


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Module 4 Wrap up Discussions – CAC



Participants at APL will return to discussions that need to be continued from previous modules as time allows



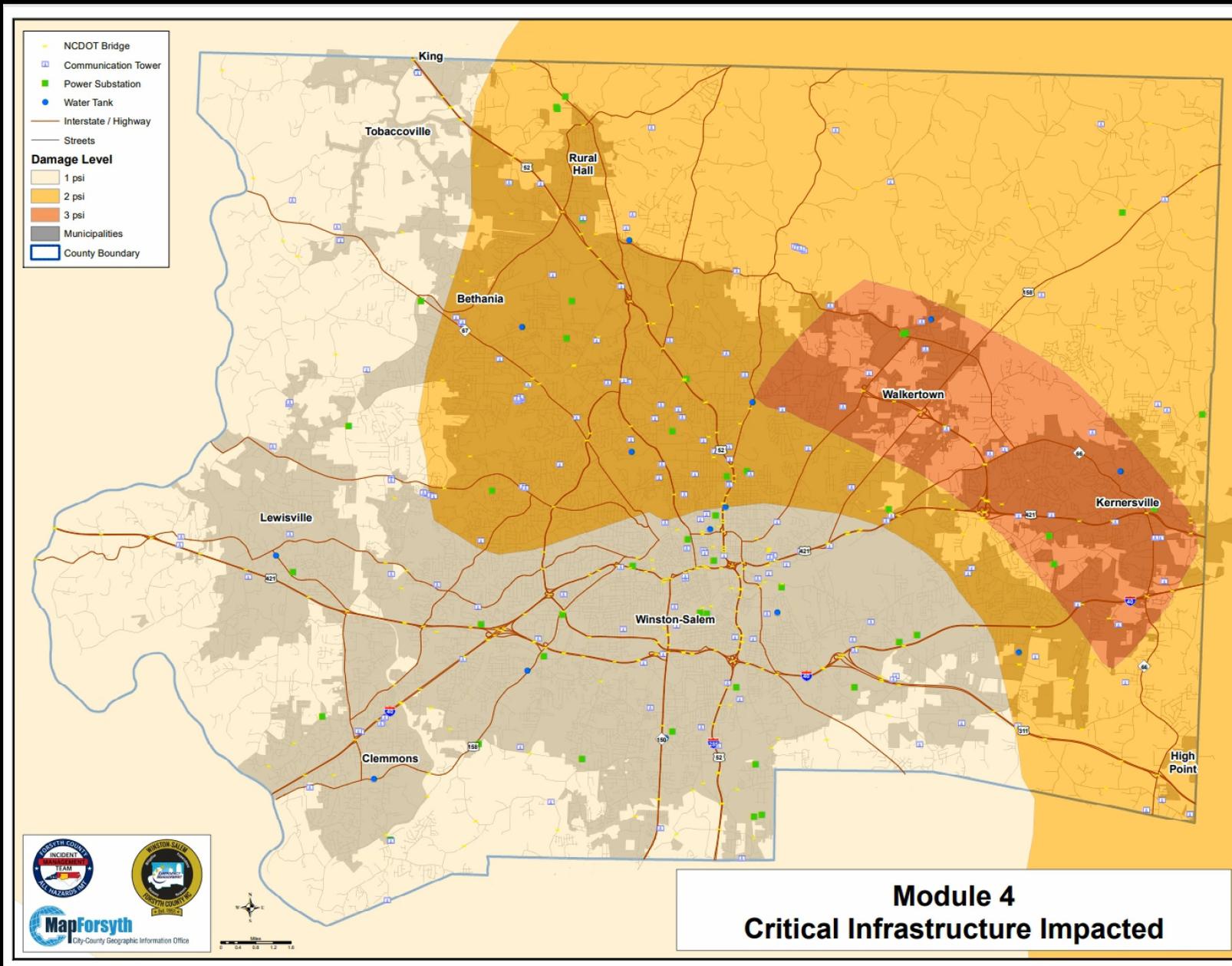


Back-Up Slides



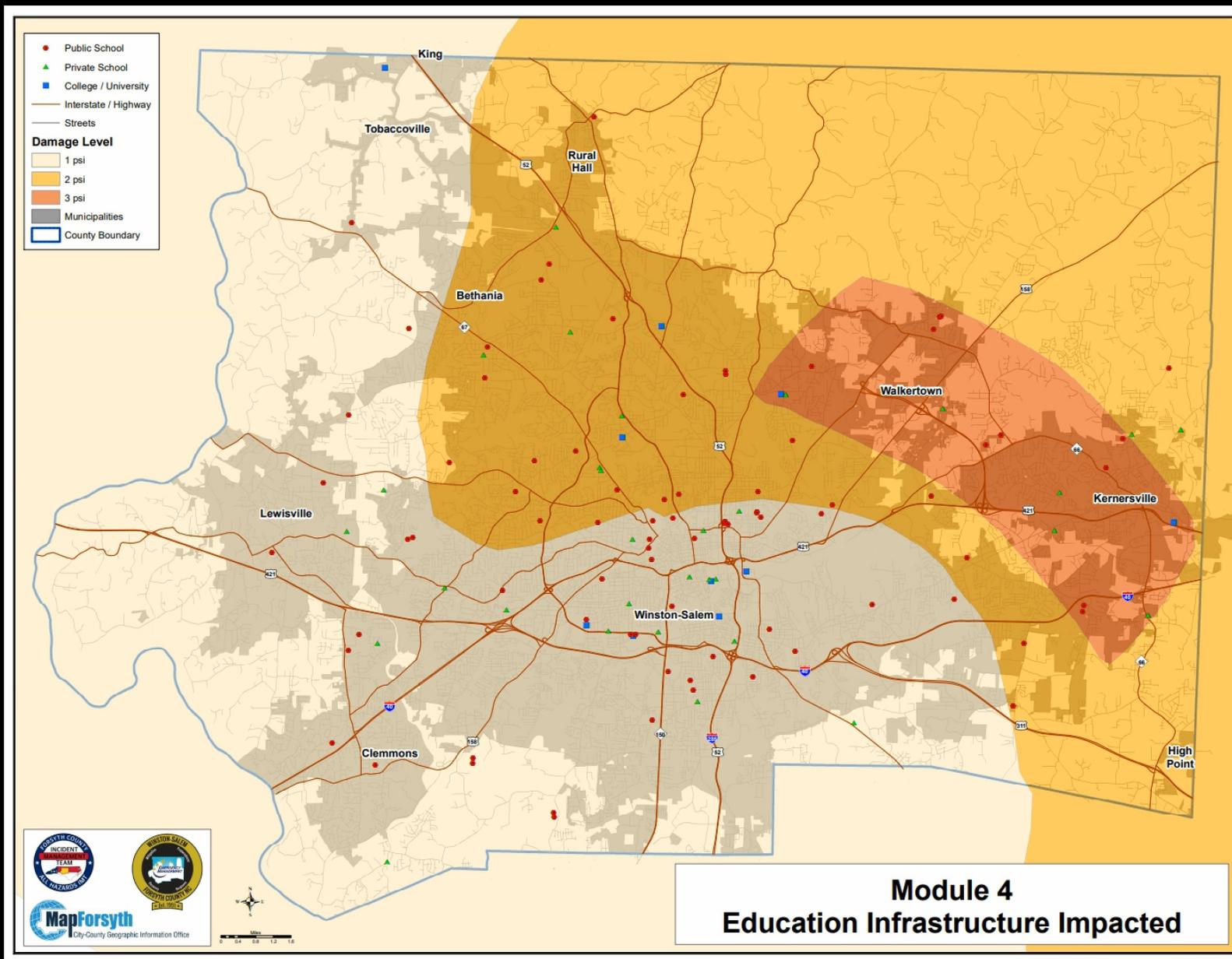
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**Module 4
Critical Infrastructure Impacted**

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**Module 4 - Final Damage Footprint
Infrastructure / Critical Facilities Damaged**

3 psi

Facility Type	Count Impacted	Total Number in County	Percent of Total Impacted
Airport	0	1	0.00%
Animal Clinic	5	35	14.29%
Bridge (NC DOT)	30	310	9.68%
Bus Station	0	1	0.00%
Child Day Care	23	169	13.61%
College/University Campus	2	10	20.00%
Communications Tower	16	172	9.30%
Electric Power Substation	5	44	11.36%
Emergency Management Office	0	1	0.00%
EMS Base/Station	2	11	18.18%
Entertainment Facility (ie Stadium, Theater, Shopping etc)	1	18	5.56%
Fire Station	8	46	17.39%
Government Admin Buildings	2	17	11.76%
Grocery Store/Food Retailer	10	84	11.90%
High Hazard Dam	4	50	8.00%
Hospital	0	5	0.00%
Long-term Care Facility	6	49	12.24%
Mental Health Facility	9	85	10.59%
Pharmacies	13	88	14.77%
Private School	5	31	16.13%
Public School	10	81	12.35%
Retirement Community	1	8	12.50%
Water Tank	2	15	13.33%
WSFCS Admin Facility	1	6	16.67%

**Module 4 - Final Damage Footprint
Infrastructure / Critical Facilities Damaged**

2 psi

Facility Type	Count Impacted	Total Number in County	Percent of Total Impacted
Airport	1	1	100.00%
Animal Clinic	16	35	45.71%
Bridge (NC DOT)	117	310	37.74%
Bus Station	0	1	0.00%
Child Day Care	90	169	53.25%
College/University Campus	4	10	40.00%
Communications Tower	94	172	54.65%
Electric Power Substation	19	44	43.18%
Emergency Management Office	0	1	0.00%
EMS Base/Station	5	11	45.45%
Entertainment Facility (ie Stadium, Theater, Shopping etc)	10	18	55.56%
Fire Station	26	46	56.52%
Government Admin Buildings	5	17	29.41%
Grocery Store/Food Retailer	39	84	46.43%
High Hazard Dam	21	50	42.00%
Hospital	1	5	20.00%
Long-term Care Facility	22	49	44.90%
Mental Health Facility	40	85	47.06%
Pharmacies	62	88	70.45%
Private School	13	31	41.94%
Public School	36	81	44.44%
Retirement Community	4	8	50.00%
Water Tank	8	15	53.33%
WSFCS Admin Facility	5	6	83.33%

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Module 4 - Final Damage Footprint Infrastructure / Critical Facilities Damaged			
1 psi			
Facility Type	Count Impacted	Total Number in County	Percent of Total Impacted
Airport	1	1	100.00%
Animal Clinic	35	35	100.00%
Bridge (NC DOT)	310	310	100.00%
Bus Station	1	1	100.00%
Child Day Care	169	169	100.00%
College/University Campus	10	10	100.00%
Communications Tower	172	172	100.00%
Electric Power Substation	44	44	100.00%
Emergency Management Office	1	1	100.00%
EMS Base/Station	11	11	100.00%
Entertainment Facility (ie Stadium, Theater, Shopping etc)	18	18	100.00%
Fire Station	46	46	100.00%
Government Admin Buildings	17	17	100.00%
Grocery Store/Food Retailer	84	84	100.00%
High Hazard Dam	50	50	100.00%
Hospital	5	5	100.00%
Long-term Care Facility	49	49	100.00%
Mental Health Facility	85	85	100.00%
Pharmacies	88	88	100.00%
Private School	31	31	100.00%
Public School	81	81	100.00%
Retirement Community	8	8	100.00%
Water Tank	15	15	100.00%
WSFCS Admin Facility	6	6	100.00%

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TTX Closing

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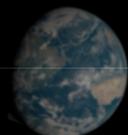
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Agenda



- Back to the parking lot:
 - If there is time, we'll revisit some key discussions from earlier modules where we had to cut things off
- Hot wash
- Path forward

Module	Description
0	Quick briefing of the read-ahead materials
1	6 months before impact
2	2 months before impact
3	6 days before impact
4	Post-impact response and recovery



Hot wash



- Gather quick comments and impressions
- Two things to think about:
 1. Our national preparedness
 - Identify any policy, technology, or capability gaps
 - Identify ways we could improve our communications across relevant agencies
 2. Comments on this exercise
 - Strengths and opportunities for improvement
 - Ideas for the future
- And of course anything else!
- Remember, you can post comments and responses to comments in the chat, too

Your comments and discussions are the data we seek to help make our TTX a success! Please keep those good thoughts flowing!

Path forward



- The team will work on consolidating all their observations and participant comments to produce a final After Action Report (AAR)
- AAR will contain:
 1. **Summary** of this exercise, including module presentation materials, attendees, etc.
 2. **Gap analysis**
 - Any identified policy, capability, or technology gaps
 - Recommendations on how to (and if we should) close them
 3. **Communications analysis**
 - Assessments on interagency communications and understanding of roles
 - Assessments on effectiveness of TTX briefings on relaying relevant, useful information to decision-makers
 - Ideas on public information dissemination
 - Summary of the parallel exercise the NASA, FEMA, and APL Public Affairs team ran regarding public messaging
 4. **Recommendations** for future exercises
 - Strengths, opportunities for improvement
 - Ideas for topics that we did not cover here, or did not have adequate time to really focus on

THANK YOU for joining us!

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